REMARKS

Claims 1-18 are all of the claims pending in the application after entry of this Amendment. New claims 13-18 are hereby added, claim 4 is rewritten as an independent method claim, and certain claims are editorially amended.

The rejections under 35 U.S.C. §112, first and second paragraphs, are believed to be overcome by the forgoing editorial amendments to the claims, and the following remarks.

Regarding lines (m) and (n) in claim 8, the Examiner apparently misunderstood the meaning of the "rim line position" as defined in the specification, and shown in Fig. 8. It is not the "contact position" of the tire and rim, but rather the outermost end of an outer surface portion of the tire contacting the rim in the radial direction when the tire is assembled into a standard rim and a maximum air pressure and load capacity are applied. See page 5, lines 13-16 of the specification. The rim line position is customarily arranged for confirming appropriate rim assembling. For example, in a tire having a size of 315/60R22.5, such as described in the specification, the rim line position would correspond to a position that is about 5 mm from a height of a rim flange. Thus, the present claim language is believed to be clear and definite, such that no amendment is necessary. Further, Applicants note that the art relied upon by the Examiner is silent regarding using the rim line position as a starting point.

Regarding the "Z-lay outer sheath structure," Applicants submit that this is a conventional twisting structure that is known in the art as evidenced by the selected portions of JIS G 3525 and JIS G 3535 attached hereto.

Turning to the prior art rejections, Ahouanto and Okuni are cited as teaching or at least suggesting the claimed positioning of the terminal end of the carcass ply and the arrangement of the reinforcing layer. However, Applicants respectfully submit that neither reference, taken alone or in combination, teaches or suggests the invention as recited in claims 1 and 8.

According to the present invention, in order to control the occurrence of separation failure at the end of the carcass ply, a carcass ply end is arranged in the vicinity of the bead core by winding the carcass ply around the bead core. In this case, a fall-down deformation of the bead portion is apt to be easily caused under higher loading, so the reinforcing layer is arranged for controlling fall-down deformation of the bead portion. Arranging at least one reinforcing layer outward and upward from the carcass ply end in the widthwise direction of the tire was one of the initial significant developments in controlling fall-down deformation.

Ahouanto increases the stiffness of the bottom region of the bead portion in contact with the rim (see column 4, lines 33-51). Ahouanto teaches increasing the stiffness in a radial direction of the tire, which is entirely different from the present invention, which is directed to increasing stiffness in the widthwise direction of the tire. Further, Ahouanto (see Fig. 5) is clearly different from the present invention with respect to the position of the terminal end of the

carcass ply and the arrangement of the reinforcing layer. Therefore, Ahouanto is of limited relevance to the present invention.

Okuni is concerned with a motorcycle semi-radial tire, which is entirely different from a pneumatic tire, particularly heavy-duty pneumatic radial tires according to the present invention. Okuni reinforces the side portion so as to improve the wet skid resistance (column 1, line 54, to column 2, line 3), which is entirely different from the present invention, which is directed to sufficiently strengthening lateral stiffness of the bead portion. Also, Okuni is clearly different from the present invention with respect to the position of the terminal end of the carcass ply and the arrangement of the reinforcing layer. Therefore, Okuni is also of limited relevance to the present invention.

Thus, Applicants respectfully submit that Ahouanto and Okuni, taken alone or in combination, neither teach nor suggest the present invention. The other cited and applied references are also believed to be clearly deficient *vis-à-vis* the amended claims.

In view of the foregoing amendments and remarks, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, he is kindly requested to contact the undersigned attorney at the local telephone number listed below.

A Petition for Extension of Time and a check for the Government fee are submitted herewith. Please charge any additional fees due (except for the Issue Fee), or credit any overpayment thereof, to our Deposit Account No. 19-4880.

Respectfully submitted,

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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

The claims are amended as follows:

1. (Amended) In a pneumatic tire comprising a tread portion, a pair of sidewall portions and a pair of bead portions and a carcass toroidally extending between a pair of bead cores embedded in the respective bead portions and comprised of at least one rubberized carcass ply containing steel cord(s) therein, in which the carcass ply is wound around the bead core from an inside of the tire toward an outside thereof ~~in a radial direction to form a part or a whole of wound portion of the carcass ply as a wind contact part along the peripheral face of the bead core, the improvement wherein at least one steel cord reinforcing layer is arranged in the bead portion~~ and has a terminal end in the vicinity of a main body of the carcass ply other than the wound portion thereof at an outer peripheral position of the bead core, wherein at least one steel cord reinforcing layer is arranged in the bead portion, and a terminal end of a reinforcing layer located outside in a widthwise direction of the tire is arranged away from the terminal end of the carcass ply.

2. (Amended) A pneumatic tire according to claim 1, wherein ~~when using two or more steel cord reinforcing layers, a main body of the carcass ply other than the wound portion~~ the main body of the carcass ply is sandwiched between two steel cord reinforcing layers in a thickness direction thereof.

4. (Amended) A ~~pneumatic tire according to claim 1, wherein the wind contact part is formed by subjecting the carcass ply to plastic deformation~~ method of forming a wind contact part of a carcass ply of a pneumatic tire, the tire comprising a tread portion, a pair of sidewall portions and a pair of bead portions and a carcass toroidally extending between a pair of bead cores embedded in the respective bead portions and comprised of at least one rubberized carcass ply containing steel cord(s) therein, in which the carcass ply is wound around the bead core from an inside of the tire toward an outside thereof and has a terminal end in the vicinity of a main body of the carcass ply other than the wound portion thereof at an outer peripheral position of the bead core, wherein at least one steel cord reinforcing layer is arranged in the bead portion, and a terminal end of a reinforcing layer located outside in a widthwise direction of the tire is arranged away from the terminal end of the carcass ply, said method comprising:

plastically deforming the carcass ply in at least one of positions corresponding to corner parts of the bead core.

5. (Amended) A pneumatic tire according to claim 1, wherein the steel cords constituting the at least one steel cord reinforcing layer have a cord diameter of 1.00-1.50 mm, and ~~a free~~ an end of the steel cords ~~has a flare having a scattering width~~ at the terminal end of the reinforcing layer is within a range of 1.0-1.5 times the cord diameter.

6. (Amended) A pneumatic tire according to claim 5, wherein the steel cords are arranged in the at least one steel cord reinforcing layer at a distance between ~~the cords~~ cord ends of 1.00-1.50 mm in a direction perpendicular to a longitudinal axis of the cord.

7. (Amended) A pneumatic tire according to claim 1, wherein the steel cord constituting the at least one steel cord reinforcing layer is a Z-lay outer-sheath structure.

8. (Amended) A pneumatic tire according to claim 1, wherein a start end of the steel cord reinforcing layer located at a side of a main body of the carcass ply is arranged so that a shortest distance (L) measured outward from a normal line (n) drawn at a first rim line position to an outer face of the bead portion in the radial direction of the tire is positioned within a range of 15-25 mm, while a terminal end of the steel cord reinforcing layer located at a side of the wind contact part of the carcass ply is arranged so as to position within a range sandwiched between a ~~vertical~~ normal line (m) drawn from an outermost end position of the bead core in the radial direction to the outer face of the bead portion and the normal line (n).

10. (Amended) A pneumatic tire according to claim 9, wherein the organic fiber cords constituting the organic fiber chafer are arranged at a cord angle of 15-75° with respect to an arranging direction of the steel cords constituting the at least one steel cord reinforcing layer.

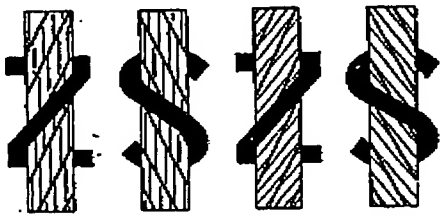
11. (Amended) A pneumatic tire according to claim 1, wherein a cushion rubber layer is interposed between the main body of the carcass ply and the start end portion of the at least one steel cord reinforcing layer.

12. (Amended) A pneumatic tire according to claim 11, wherein the cushion rubber layer at the position of the start end of the at least one steel cord reinforcing layer has a rubber gauge of 1.5-2.0 mm viewing a section in a widthwise direction of the tire.

New Claims 13-18 are added.

2.2 Type of Lay Types of lay shall be as shown in Fig. 1. The wires in the ands and the strands in the rope shall be laid in the opposite directions in the linary Lay Rope, while in the same direction in the Langs Lay Rope. Unless erwise specified, the direction of lay shall be Z lay.

Fig. 1. Type of Lay



2.3 Grade of Wire Ropes shall be classified by the grade of wire as indicated Table 2.

Table 2. Grade of Wire

Grade	Finish of wire
Grade E (135 kg/mm^2 class)	Bright
Grade G (150 kg/mm^2 class)	Galvanized (including drawn after galvanizing) (1)
Grade A (165 kg/mm^2 class)	Bright and drawn after galvanizing (1)
Grade B (180 kg/mm^2 class)	Bright

Note (1) Wires drawn after galvanizing shall not exceed 2.0 mm in diameter.

Remark: Numerals in parentheses indicated in Table 2 shows the nominal tensile strength of wire, with which breaking loads of the rope indicated in Appended Table 1 to 15 are calculated.

2.4 General Classification Combination of rope construction, type of lay, grade wire and coating or uncoating of wire are shown in Table 3.

Table 3. General Classification

Type	Rope designation	Ordinary Z or S lay: Grade E (Bright)	Ordinary Z or S lay: Grade G (Galv.)	Ordinary Z or S lay: Grade A (Bright Galv.)	Ordinary Z or S lay: Grade B (Bright)	Langs Z or S lay: Grade E (Bright)	Langs Z or S lay: Grade A (Bright Galv.)	Langs Z or S lay: Grade B (Bright)
Type 1	6x7	–	O	–	–	–	O	O
Type 2	6x12	–	O	–	–	–	–	–
Type 3	6x19	–	O	O	O	–	O	O
Type 4	6x24	–	O	O	–	–	–	–
Type 5	6x30	–	O	–	–	–	–	–
Type 6	6x37	–	O	O	O	–	–	–
Type 7	6x61	–	O	O	O	–	–	–
Type 8	6xF|(3x2+5)+7|	–	–	–	–	–	O	O
Type 9	6xF|(3x2+5)+12+12|	–	–	–	–	–	O	O
Type 10(a)	6xS(19)	–	O	O	O	–	O	O
Type 10(b)	6xS(19)	O	–	–	–	–	–	–
Type 11(a)	6xW(19)	–	O	O	O	–	O	O
Type 11(b)	6xW(19)	O	–	–	–	–	–	–
Type 12(a)	6xFi(25)	–	O	O	O	–	O	O
Type 12(b)	6xFi(25)	O	–	–	–	–	–	–
Type 13	6xFi(29)	–	O	O	O	–	O	O
Type 14	7x7+6xFi(25)	–	–	O	O	–	O	O
Type 15	8xS(19)	O	–	O	O	O	O	O
Type 16	8xW(19)	O	–	O	O	O	O	O
Type 17	8xFi(35)	O	–	O	O	O	O	O
Type 18	7x7+6xFi(29)	–	–	O	O	–	O	O
Type 19	6xWS(26)	–	O	O	O	–	O	O
Type 20	6xWS(31)	–	O	O	O	–	O	O
Type 21	6xWS(36)	–	O	O	O	–	O	O
Type 22	6xWS(41)	–	O	O	O	–	O	O
Type 23	6xSeS(37)	–	O	O	O	–	O	O

Remarks 1. Type 10 (b), 11 (b), 12 (b), 15, 16 and 17 are used mainly for elevators.

2. Grade A of Type 8, 9, 15, 16 and 17 are bright only.

joint throughout the entire length of rope. If necessary, for the manufacturing reason, the wire may be placed when the diameter does not exceed 0.35 mm, and welded or brazed for the diameter exceeding 0.35 mm. Unless otherwise specified, the joint shall not exceed one for every 10 m of the strand length, and the joint of junction shall be laid up so as not come close to one another. The portion welded or brazed of carbon steel shall have to be plated over for repair.

3.4 Unless otherwise specified, the lay of rope shall be of ordinary Z lay. Th ordinary Z lay shall be as shown in Fig. 1, the rope and strand being laid in opposite direction to each other. The direction of core strand lay of wire strand core rope shall be in the same direction as the rope lay.

Fig. 1 Ordinary Z-Lay

3.5 The rope shall be applied with the superior quality lubricant at the time of manufacture. The required quantity of lubricant shall be determined by the indication of trace of lubricant when 30 cm length of finished rope is wiped over with white cloth. The lubricant shall have rust preventing quality, and when specified, it shall not lose its plasticity at −55°C and does not run at temperature of under +70°C.

4.5 The rope must be capable of resisting the breaking load given in Attached Table 1.

4.6 The tension, number of reversals and breaking load after endurance test by endurance test on A 3 rope having the diameter shown in Table 3 are as given in Table 3.

Table 3 Condition of Endurance Test

Dia. of rope mm (in)	Kind of wire	Tension (kg)	Number of reversals	Breaking load after endurance test (kg)
3.18 (1/8)	Carbon steel	9.1	70,000	454
	Stainless steel	9.1	150,000	431
4.0 (5/32)	Carbon steel	13.6	160,000	635
	Stainless steel	13.6	75,000	590
4.76 (3/16)	Carbon steel	20.4	130,000	953
	Stainless steel	20.4	65,000	885
6.35 (1/4)	Carbon steel	31.8	130,000	1590
	Stainless steel	31.8	50,000	1500

Remarks: 1. The tension shall be 1/2 of load (W) applied on idle pulley.
2. The number of reversals shall mean the number of times the wire rope is subjected to bending.